NPS Form 10-900
(7-81)

OMB No. 1024-0018
EXP. 10-31-84

United States Department of the Interior
National Park Service

National Register of Historic Places Inventory—Nomination Form

See instructions in *How to Complete National Register Forms*
Type all entries—complete applicable sections

For NPS use only
received
date entered

1. Name

historic Dewlen-Spohnhauer Bridge

and/or common Verdigris River Bridge

2. Location

street & number 1 mile east of Independence on old US 160 N/A not for publication

city, town Independence x vicinity of ~~congressional district~~

state Kansas code 20 county Montgomery code 125

3. Classification

Category	Ownership	Status	Present Use	
___ district	_x_ public	_x_ occupied	___ agriculture	___ museum
___ building(s)	___ private	___ unoccupied	___ commercial	___ park
_x_ structure	___ both	___ work in progress	___ educational	___ private residence
___ site	**Public Acquisition**	**Accessible**	___ entertainment	___ religious
___ object	___ in process	___ yes: restricted	___ government	___ scientific
	___ being considered	_x_ yes: unrestricted	___ industrial	_x_ transportation
	N/A	___ no	___ military	___ other:

4. Owner of Property

name Montgomery County

street & number Courthouse

city, town Independence N/A vicinity of state Kansas

5. Location of Legal Description

courthouse, registry of deeds, etc. Register of Deeds

street & number Montgomery County Courthouse

city, town Independence state Kansas

6. Representation in Existing Surveys

title Inventory of Marsh Arch Bridges -- Kansas Department of Transportation has this property been determined eligible? ___ yes _x_ no

date 1980 ___ federal _x_ state ___ county ___ local

depository for survey records Kansas State Historical Society

city, town Topeka state Kansas

7. Description

Condition		Check one	Check one
___ excellent	___ deteriorated	___ unaltered	_x_ original site
_x_ good	___ ruins	_x_ altered	___ moved date _____
___ fair	___ unexposed		

Describe the present and original (if known) physical appearance

The Dewlin-Spohnhauer bridge spans the Verdigris River 1 mile east of Independence, Kansas on old U.S. 160. It consists of four reinforced concrete "rainbow arch" (or "Marsh arch") spans making a total length of 420 feet. Since the bridge's construction the roadway has been periodically resurfaced but this has not significantly compromised its integrity. Marsh's plans allowed for whatever filling material between the bridge deck curbs that locality might desire.

There has been damage done to the hangers and the cement has been broken from the superstructure. Also there is evidence that the bridge might have once been fitted with light fixtures.

The lowest pier footing lies approximately 63 feet below grade and the low water level is 45 feet below grade.

The best description of a rainbow arch span is contained in James B. Marsh's 1911 patent application. The bridge consists of ". . . two abutments (which could be piers), a pair of arches disposed between and springing from the abutments, the floor carried by and between the arches and reaching from one abutment to the other where it alines with the parapets or rails along opposite sides of the floor line." The original patents called for slideable wear plates to be moulded into the concrete where the bridge floor came into contact with the beams and abutments. This is of importance as one of the main benefits of this design was to allow for the expansion and contraction of the reinforced concrete bridge under varying conditions of temperature and moisture.

There were two basic rainbow arch designs, fixed and tied. The original patent application describes the fixed type in which case the arch flowed below the bridge deck and was "fixed" directly into the abutment. This massive abutment (or pier) resisted both the horizontal and the vertical thrust of the arch. In a tied design such as that of the Verdigris River bridge, the arch did not flow below the deck line and was not fixed directly into the abutment. It was secured atop the abutment or pier by the use of steel rocker or expansion rocker bearings. Vertical thrust was resisted by the pier and bearing, while horizontal thrust was resisted by the addition of a lower chord.

8. Significance

Period	Areas of Significance—Check and justify below				
___ prehistoric	___ archeology-prehistoric	___ community planning	___ landscape architecture	___ religion	
___ 1400–1499	___ archeology-historic	___ conservation	___ law	___ science	
___ 1500–1599	___ agriculture	___ economics	___ literature	___ sculpture	
___ 1600–1699	___ architecture	___ education	___ military	___ social/ humanitarian	
___ 1700–1799	___ art	X engineering	___ music	___ theater	
___ 1800–1899	___ commerce	___ exploration/settlement	___ philosophy	___ transportation	
X 1900–	___ communications	___ industry	___ politics/government	___ other (specify)	
		___ invention			

Specific dates 1928 **Builder/Architect** James B. Marsh, Engineer

Statement of Significance (in one paragraph)

The Verdigris River bridge east of Independence, Kansas retains its integrity of location, design, setting, materials, feeling, and association. It is associated with the life of James B. Marsh, pioneer in steel and concrete bridge construction. It embodies the distinctive characteristics of a type and method of construction that is no longer used, and, as such, may yield information important to the history of engineering. Of the 72 rainbow arches known to remain in Kansas the Verdigris River bridge is the only one possessing four arch spans. The needs of modern transportation have endangered the rainbow arches but the Verdigris River bridge has a good chance of survival due to a new highway that has re-routed much of the bridge's traffic.

James Barney Marsh was born in 1856 at North Lake, Wisconsin. He went to Iowa at the age of 18 to enter preparatory school at Fredericksburg. Marsh graduated in 1882 from Iowa State College of Agriculture and Mechanical Arts in Ames, with a B.M.E. degree. In March of 1883 he began his professional career in the Des Moines office of the King Bridge Company of Cleveland, Ohio. With King, Marsh was involved in the design, sales and actual erection of metal bridges. While he continued to work with the King Company, he also became head of the Northern Agency for the Kansas City Bridge and Iron Company. In this capacity, he both designed and superintended the actual construction work done by the company. By March of 1889, Marsh had become general western agent and contracting engineer for the King Bridge Company and was placed in charge of the general western office in Des Moines. In the spring of 1896, he formed his own company, the Marsh Bridge Company, and was its sole proprietor. In private practice as a contracting engineer, Marsh was able to more fully develop his own designs. He also constructed the designs he developed, usually using steel as a medium. At the turn of the century, Marsh initiated the use of both concrete and steel in his bridge design. In April of 1904, the Marsh Bridge Company was incorporated with Marsh as president and chief engineer. In 1909, the company was reorganized as the Marsh Engineering Company.

It was not until the introduction of the "rainbow arch" by Marsh, that Kansas made widespread use of reinforced concrete spans for major stream crossings. Marsh canvassed the midwest, selling his arches in direct competition with the steel trusses at that time.

Bids for the construction of the Verdigris River bridge were opened on June 22, 1926. All of them were rejected as they were all above the engineer's estimate and a new opening date was set for July 21, 1926. This time the contract was let to the Fifield Construction Company of Waterloo, Iowa for a bid of $63,218.49. The Independence Daily Reporter on July 22, 1926, however, stated that when the contract was actually signed it was for an additional $27 bringing the total to $63,245.49. The expected date of completion was in the summer or fall of 1927.

See Continuation Sheet, #8.

8. Significance

By the 10th of November, 1926, the bridge's east abutment was completed and work had begun on the west.

On March 23, 1927 the South Kansas Tribune reported the false work on the middle span of the Verdigris River bridge had been washed away by the recent rains and the derrick, pile driver and hoisting engine had fallen into the river.

It was announced on July 20, 1927 by the South Kansas Tribune that the Verdigris River bridge would receive plaques bearing the names of Glen Dewlin and Harry Spohnhauer, two ex-service men who had died overseas.

On December 21, 1927 the Fifield Construction Company submitted to the board of county commissioners a claim for $4,905.41 for the loss sustained in the building of the Verdigris bridge due to the unprecedented floods of the past summer. The Tribune said it was "hardly thinkable that the county assumed all the risk in a matter of that kind especially when there were several reliable construction companies eager to get the work."

The reinforced concrete rainbow arch bridge over the Verdigris River was opened to the public on April 17, 1928, over a year after the contract had been signed.

9. Bibliography

"To Open Highway Bids June 22," South Kansas Tribune, June 2, 1926, p. 3, c. 4.
"Road Program Adopted," South Kansas Tribune, June 16, 1926, p. 1, c. 7.
"Bids Are Opened on Road Work," South Kansas Tribune, June 22, 1926, p. 1, c. 6.
"Contract Let For Road East to Junction," South Kansas Tribune, June 23, 1926, p. 1, c. 4.
"Road Work Starting Soon," South Kansas Tribune, June 30, 1926, p. 3, c. 3.
"New River Bridge Contract Let," Independence Daily Reporter, July 21, 1926, p. 1, c. 4.
"Sign For Bridge," Indepencence Daily Reporter, July 21, 1926, p. 1, c. 4.
"The Concrete Bridge . . ." South Kansas Tribune, November 3, 1926, p. 3, c. 4.
"Bridgework Progressing," South Kansas Tribune, November 10, 1926, p. 3, c. 6.
"Working on Bridges," South Kansas Tribune, December 15, 1926, p. 3, c. 4.
"Legionnaires Will Name River Bridge," South Kansas Tribune, December 22, 1926, p. 2, c. 4.
"Road Program Announced," South Kansas Tribune, January 26, 1927, p. 1, c. 5.
"The False Work . . ." South Kansas Tribune, March 23, 1927, p. 3, c. 2.
"New Cement Bridge Looms Up," South Kansas Tribune, April 6, 1927, p. 3, c. 3.
"Naming the Bridges," South Kansas Tribune, April 20, 1927, p. 3, c. 3.
"It is Estimated . . ." South Kansas Tribune, August 17, 1927, p. 3, c. 3.
"Want People to Stand Loss," South Kansas Tribune, December 21, 1927, p. 1, c. 5.
"Concrete on Cherryvale Road Finished," South Kansas Tribune, January 25, 1928, p. 1, c. 1.
"Approach to the New River Bridge to be Started Soon," South Kansas Tribune, February 15, 1928, p. 4, c. 4.
"List of Material . . ." South Kansas Tribune, March 14, 1928, p. 2, c. 4.
"New Concrete Bridge Opened Yesterday," South Kansas Tribune, April 18, 1928, p. 3, c. 6.

9. Bibliography continued

Nichols, C. S., Comp. Directory of Graduates of Division of Engineering, Iowa State College of Agriculture and Mechanical Arts, Ames, Iowa.

The Alumnus of Iowa State. Alumni Association of Iowa State College, Ames, Volume XXXII, #1, July 1936.

Marsh, James B., Specification of Letters Patent, Number 1,035,026, patented August 6, 1912, United States Patent Office, Washington, D.C.

Plans and files. Design Department, Kansas Department of Transportation, Topeka, Kansas Microfilm Roll #31, frame 365+.

9. Major Bibliographical References

See Continuation Sheet, Item 9.

10. Geographical Data

Acreage of nominated property .5

Quadrangle name Independence

Quadrangle scale 1:24,000

UMT References

	Zone	Easting	Northing
A	15	262350	4121290
B			
C			
D			
E			
F			
G			
H			

Verbal boundary description and justification

That property on and over which the bridge is built, 1 mile east of Independence, Kansas, S32, T32S, R16E. Includes bridge superstructure plus supporting piers and abutments.

List all states and counties for properties overlapping state or county boundaries

state	N/A	code	county	code
state		code	county	code

11. Form Prepared By

name/title Larry Jochims, Research Historian and Michael Snell

organization Kansas State Historical Society date

street & number 10th and Jackson Streets telephone (913) 296-2973

city or town Topeka state Kansas

12. State Historic Preservation Officer Certification

The evaluated significance of this property within the state is:

___ national x state ___ local

As the designated State Historic Preservation Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service.

State Historic Preservation Officer signature

title date

For NPS use only

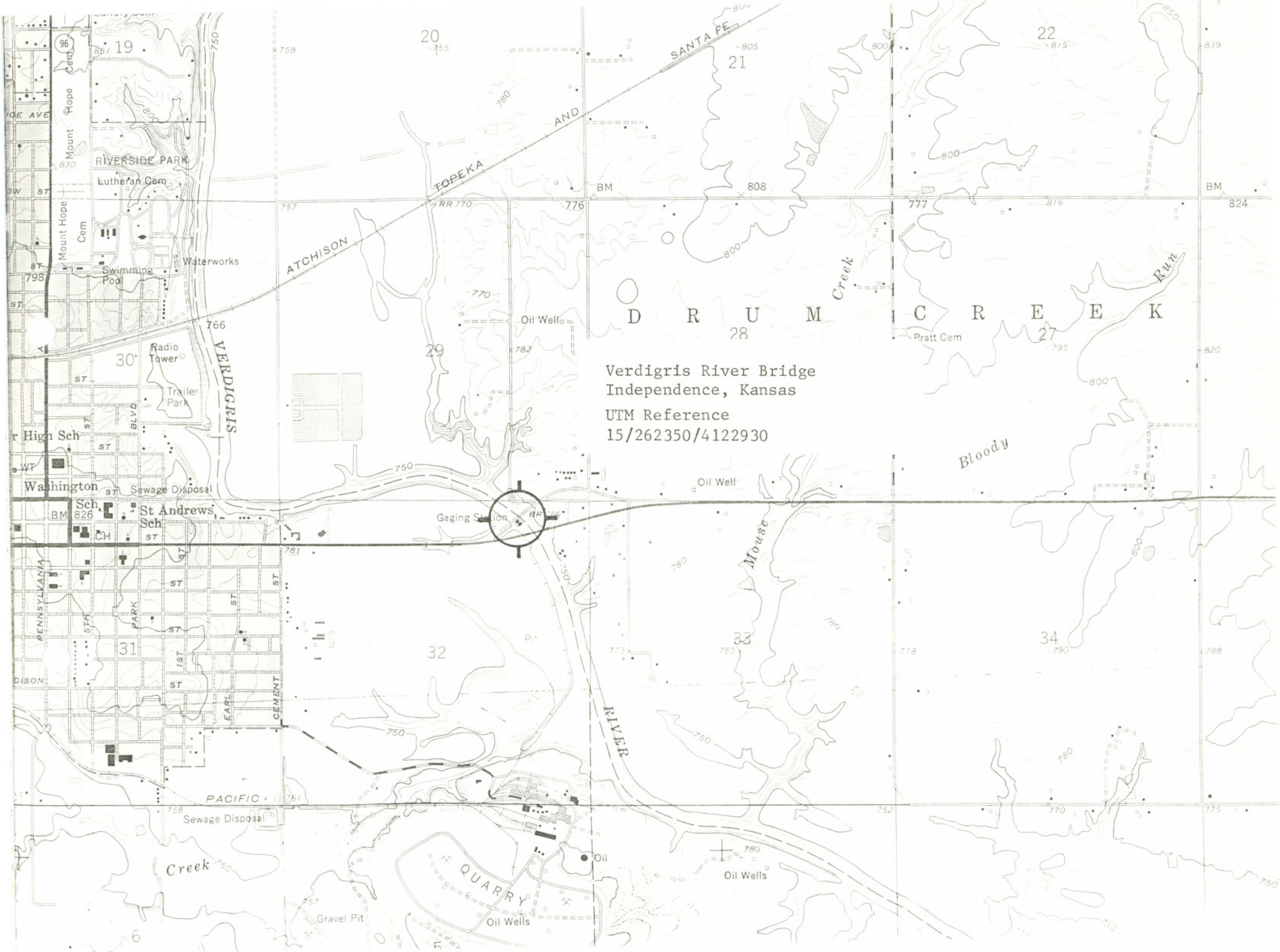
I hereby certify that this property is included in the National Register

date

Keeper of the National Register

Attest: date

Chief of Registration



Verdigris River Bridge
Independence, Kansas

UTM Reference
15/262350/4122930